We claim:

1. A method to improve the system performance of an optical fiber transmission system by using
   the optical RZ format as the transmission format, transferring the RZ format to the NRZ (or NRZ-like) format in front of the receiver, then detecting the NRZ (or NRZ-like) format at the receiver.
2. The method of claim 1 wherein said the RZ format is generated in the transmitter and enter into the pre-dispersion compensation unit.
3. The method of claim 1 wherein said the RZ format is generated in the transmitter and then enter into transmission link directly.
4. The method of claim 1 wherein said the optical fiber transmission system can be the noise limited system or/and the generalized timing-jitter limited systems.
5. The method of claim 1 wherein said optical RZ pulse can be but not limited to be the format of dispersion managed soliton, conventional soliton, chirped-RZ, non-chirped RZ, carrier-suppressed RZ, and carrier-suppressed chirped-RZ etc.
6. The method of claim 1 can increase the tolerance of both the amplitude fluctuation and the generalized timing jitter which includes the Gordon-Haus timing jitter, and the pulse position variation induced by the pulse interaction, interchannel cross talks (including four-wave-mixing and cross-phase modulation), and polarization-mode-dispersion (PMD) etc.
7. An optical fiber transmission system comprising
   at least one optical transmitter to generate optical RZ pulses, (optional) WDM multiplexers or couplers, (optional) pre-dispersion compensation units, one transmission link consisted of fiber spans and amplifiers, post-dispersion compensation units, WDM demultiplexer or couplers, (optional) optical pulse transformers which transfers optical RZ pulses to optical NRZ (or NRZ-like) pulses, and receivers to detect optical NRZ (or NRZ-like) pulses.

8. The optical fiber transmission system of claim 7 wherein said optical RZ pulses can be but not limited to be the format of dispersion managed soliton, conventional soliton, chirped-RZ, non-chirped RZ, carrier-suppressed RZ, and carrier-suppressed chirped-RZ etc.
9. The optical fiber transmission system of claim 7 wherein said optical RZ pulses of each wavelength channel can have either two orthogonal polarization sub-channels or two co-polarization sub-channels at same wavelength.
10. The optical fiber transmission system of claim 7 wherein said optical RZ pulses is generated in the transmitter and enter into the pre-dispersion compensation unit.
11. The optical fiber transmission system of claim 7 wherein said the RZ pulses are generated in the transmitter and then enter into transmission link directly.
12. The optical fiber transmission system of claim 7 can be the noise limited system or/and the generalized timing-jitter limited systems.
13. The optical fiber transmission system of claim 7 can be point to point systems, ring networks or mesh networks.
14. The optical fiber transmission system of claim 7 can be WDM system or single-wavelength system.
15. The optical fiber transmission system of claim 7 wherein said optical pulse transformers can transform either the optical RZ pulses of single wavelength channel or multiple wavelength channels to NRZ pulses.
16. The optical fiber transmission system of claim 7 wherein said the optical RZ pulses in front of said the optical pulse transformers can be either with or without frequency chirp.
17. The optical fiber transmission system of claim 7 wherein said the receiver includes an optional optical filter, a photodetector, a high-gain electrical amplifier, an (optional) low pass electrical filter and a decision circuit.
18. An optical fiber transmission system of claim 7 wherein said the optical pulse transformers comprising

an optical pre-amplifier to amplify the RZ pulses, an optional optical filter to filter ASE noise and a span of normal dispersion fiber to transform high power optical RZ pulses to optical NRZ pulses by the combination effects of self-phase modulation and normal dispersion.